

December 2011 MSS/LPS/SPS Joint Subcommittee Meeting

ABSTRACT SUBMITTAL FORM

The submission of an abstract is an agreement to complete a final paper for publication and attend the meeting to present this information. Complete all information requested in the author and co-author information sections; the first author listed will receive paper acceptance notices and all correspondence. Abstracts must be submitted electronically; submittal instructions are located in the call for papers. **The abstract deadline date is June 13, 2011.**

ABSTRACT INFORMATION

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MANAGEMENT APPROVAL

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ABSTRACT SUBMITTAL FORM

Unclassified Abstract

(250-300 words; do not include figures or tables)

This paper will document our effort in validating a coupled fluid-structure interaction CFD tool in predicting a damping device performance in the laboratory condition. Consistently good comparisons of “blind” CFD predictions against experimental data under various operation conditions, design parameters, and cryogenic environment will be presented. The power of the coupled CFD-structures interaction code in explaining some unexpected phenomena of the device observed during the technology development will be illustrated. The evolution of the damper device design inside the LOX tank will be used to demonstrate the contribution of the tool in understanding, optimization and implementation of LOX damper in Ares I vehicle. It is due to the present validation effort, the LOX damper technology has matured to TRL 5. The present effort has also contributed to the transition of the technology from an early conceptual observation to the baseline design of thrust oscillation mitigation for the Ares I within a 10 month period.